

ABSTRACT

Low loss, reliable variable optical attenuators and 1X2 switches and polarization insensitive low loss, reliable variable optical attenuators and 1X2 optical switches are described. In one embodiment, a system of the present invention includes a polarization separating sub-system a polarization recombining sub-system and one or more switchable volume diffraction gratings to provide polarization insensitive low loss, reliable variable optical attenuators and 1X2 optical switches.